

Patent claims

1. A camera head system having a panning apparatus (1, 1a, 1b, 1c) for carrying out vertical tilting movements and/or horizontal panning movements of a camera, in particular a film or video camera, the panning apparatus (1, 1a, 1b, 1c) being fitted in or on a substantially flat holding element (5) on which there are fitted at an angular spacing about an imaginary vertical axis (A) at least three casters (2) rotating respectively about a horizontal caster axle (3), it being possible for at least one of the caster axles (3) to rotate and to be fixed in a horizontal plane, at least one running direction adjusting device (11, 11a, 11b, 12, 13, 14, 15, 16, 16i, 17) being provided for adjusting the rotary position of at least one caster axle.
2. The camera head system as claimed in claim 1, characterized in that it is possible for all the caster axles (3) to rotate and to be fixed in a horizontal plane.
3. The camera head system as claimed in claim 1, characterized in that the rotating directions of the casters (2) can be locked.
4. The camera head system as claimed in claim 1, characterized in that an adjusting device is provided for adjusting the friction between at least one caster (2) and its caster axle (3).
5. The camera head system as claimed in claim 4, characterized in that a damping device is provided for damping the friction between at least one caster (2) and its caster axle (3).
6. The camera head system as claimed in claim 5, characterized in that the damping level can be adjusted.
7. The camera head system as claimed in claim 1, characterized in that three casters (2) are provided that are arranged at an angular spacing of in each case 120° about the vertical axis (A).
8. The camera head system as claimed in claim 1, characterized in that the height of the casters (2) can be adjusted.
9. The camera head system as claimed in claim 8, characterized in that at least one caster axle (3) is supported in a vertically extending supporting tube (7) that is provided with an external thread (7a) that engages with an internal thread of a threaded opening provided on the holding element (5).
10. The camera head system as claimed in claim 9, characterized in that the rotary position of the supporting tube (7) can be locked in the holding element (5).
11. The camera head system as claimed in claim 1, characterized in that at least one bearing element (6) in which one caster axle (3) is fitted is detachably connected to the holding element (5).
12. The camera head system as claimed in claim 1, characterized in that the caster axle (3) is supported in a bearing ring element (10), provided on the outside of the holding element (5), such that it can rotate in the horizontal plane.

13. The camera head system as claimed in claim 1, characterized in that the running direction adjusting device comprises a scale (11) that indicates the rotary position of the running direction of the at least one caster axle (3) with reference to the holding element (5) at a reference mark (12).

14. The camera head system as claimed in claim 13, characterized in that the scale (11) has at least one special marking (11b) for indicating a position in which the casters are panned by $(30+x*60)^\circ$ relative to a main axis (5a) of the panning apparatus (1, 1a), where x can be a whole number between 1 and 5.

15. The camera head system as claimed in claim 1, characterized in that the running direction adjusting device comprises a digital display (15) that indicates the rotary position of the at least one caster axle (3) in the horizontal plane with reference to the flat holding element (5).

16. The camera head system as claimed in claim 1, characterized in that the rotary angle of a caster axle (3) in a horizontal plane with reference to the flat holding element (5) is determined with the aid of an incremental encoder.

17. The camera head system as claimed in claim 1, characterized in that the running direction adjusting device comprises markings (13) or direction-finding elements (16, 16i) for aligning the caster axle (3) in the direction of an imaginary point.

18. The camera head system as claimed in claim 1, characterized in that the running direction adjusting device comprises at least one motor (17) by means of which it is possible to adjust the rotary position of the running direction of the at least one caster axle (3).

19. The camera head system as claimed in claim 18, characterized in that the at least one motor (17) is controlled by a CPU (19).

20. The camera head system as claimed in claim 1, characterized in that the rotary movement of at least one caster (2) about the caster axle (3) can be driven by means of a motor.

21. The camera head system as claimed in claim 20, characterized in that the speed of the rotary movement of at least one caster (2) about the caster axle (3) is controlled by a central CPU (19).

22. The camera head system as claimed in claim 1, characterized in that the horizontal panning movements and/or the vertical tilting movements of a camera in the panning apparatus (1, 1a, 1b) are performed by means of motors that can be controlled by a central CPU (19).

23. The camera head system as claimed in claim 1, characterized in that the panning apparatus (1c) can be removed from the holding element (5).

24. The camera head system as claimed in claim 1, characterized in that the panning apparatus (1a) comprises an L-shaped holder (21) for mounting a camera that is fitted such that it can pan about a horizontal axis on a fastening column (25).

25. The camera head system as claimed in claim 24, characterized in that the fastening column (25) is fitted on a bearing ring (26) that is supported in the holding element (5) such that it can rotate about a vertical axis and which has an annular opening (27) that is designed such that a mounted camera and the L-shaped holder (21) can pan, or partially pan, through.
26. The camera head system as claimed in claim 24, characterized in that the fastening column (25) can be removed together with the L-shaped holder (21).
27. The camera head system as claimed in claim 1, characterized in that fitted on the holding element (5) is an exchangeable rocker (30) that has on its underside at least one arcuately curved guide skid (31) that rests with its convex outer surface (32) on at least two lower guide rollers (34) arranged at a spacing from one another, and touches at least one upper guide roller (35) with its concave inner surface.
28. The camera head system as claimed in claim 1, characterized in that the at least one caster axle (3) is supported such that it rotates in the horizontal plane about a vertical axis that lies outside the center of the caster (2).
29. The camera head system as claimed in claim 1, characterized in that a guide rod (52) is fitted with one end on the holding element (5) such that it can be pivoted about a horizontal axis.
30. The camera head system as claimed in claim 28, characterized in that the guide rod (52) is fitted at one end on the holding element (5) such that it can rotate about a vertical axis, it being possible to adjust and lock the rotary position.
31. A guide system having a camera head system as claimed in one of claims 1 to 30, characterized by a rail section (45, 46, 47) having an upwardly open guide groove (49) with a U-shaped cross section and in which two casters (2) of the camera head system are guided.
32. The guide system as claimed in claim 31, characterized by a further rail section (48), which is arranged in a parallel fashion at a spacing from one rail section (47) and in whose guide groove (49) at least one further caster (2) is guided.